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ABSTRACT

This paper systematically reports differences in the cost of living among different parts of the United States, as well as among different rural and urban counties in the state of Illinois. A systematic procedure for estimating these differences based on the Bureau of Labor Statistics data for selected localities was developed by McMahon and Melton in 1978, but discontinued in 1981. This paper updates this procedure, as well as the estimates, adapting the new method to the reduced availability of data. After an introductory discussion of existing cost-of-living measures and their uses, the resulting new estimates for 1988 of differences in the cost of living among the 50 states and among counties in Illinois are presented. The paper concludes with a brief analysis of the nature of changes in the geographical differences in the cost of living between 1977, the date of the earlier study, and the present. References are included. (TE)

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GEOGRAPHICAL COST OF LIVING DIFFERENCES: AN UPDATE

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GEOGRAPHICAL COST OF LIVING DIFFERENCES: AN UPDATE

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The author is greatly indebted to
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August 1988

This series of monographs is dedicated to Professor Lucy Jen Huang Hickrod, late of the Sociology Department of Illinois State University. Death has forever taken Professor Huang Hickrod from intellectual labors, but she remains an inspiration to her husband, her family and her many friends. Sic transit Gloria Mundi.

Geographical Cost of Living Differences: An Update

Walter W. McMahon

There are significant differences in the cost of living among different parts of the country, as well as among different rural and urban counties within the same state. But there are no systematic reports of these differences by state or by county of the type presented in this paper.

A systematic procedure for estimating these differences based on the Bureau of Labor Statistics data for selected localities was developed earlier by McMahon and Melton (1978). The resulting estimates found many uses, but the estimates were for 1977. Since then an oil price shock occurred in 1979 affecting oil producing and oil consuming states differently, followed by a major 1980-84 recession with larger effects in industrial states and a high priced dollar that curtailed farm exports. All of these could be expected to lead to differential effects on prices and a changed pattern of geographical cost of living differences.

The ideal way to evaluate these differences would be to collect price data from each county in every state, and to also conduct detailed budget studies of family expenditures in each county in the nation to establish the necessary weights. This procedure would be prohibitively expensive, however, and therefore likely will never be done. The Bureau of Labor Statistics, furthermore, discontinued collecting and publishing its cost of living index for selected localities in 1981. It was this cost of living as measured by standard

budgets for a given standard of living for a typical family of four that was the basis for the McMahon-Melton analysis and estimates for the nonsampled areas.

This paper will update the procedure, as well as the estimates, adapting the new method used to this reduced data availability. The resulting new estimates for 1988 of differences in the cost of living among the 50 states, and among counties within one state (Illinois), then will be presented. The paper concludes with a brief analysis of the nature of changes in the geographical differences in the cost of living between 1977, the date of the earlier study, and the present.

I. Existing Cost of Living Measures and Their Uses

There currently are no measures of differences in the cost of living among states or any other areas since the discontinuation of the BLS standard budget series for 23 localities in 1981. A Consumer Price Index (CPI) series continues to be published for the four major regions, including urban and rural breakdowns within regions plus the CPI's for 15 major cities. These are not available by state, or by county. They also do not show inter-area differences in living costs, because the geographical CPI takes all budgets in the base year as the same (1982-84 = 100), whereas in fact the cost of living in these different places in the base year differs considerably.

The method adopted therefore seeks to take these base-year differences in the cost of living into account by using the last report for a family cost of living budget reported by the BLS (1982) for the Fall

of 1981. This is updated to March of 1988 using the changes in the Consumer Price Index, which thereby takes both the changes in prices and the differences in the base year cost of living into account. However the Consumer Price Index also does not apply to states, but instead to the urban and rural areas within geographical regions and to a few big cities. So to relate to this, the population living in the urban Standard Metropolitan Statistical Areas (SMSA's) as a percent of the population in the non-SMA areas taken from the Census, U.S. Department of Commerce (1980) was used to get a weighted average of the urban and rural components of the Consumer Price Index. The resulting adjusted cost of living index for the BLS' 23 different localities then becomes the dependent variable used in the regression analysis. The logic of the model, and how each of the three exploratory variables chosen can be used to predict the cost of living index for the other states and for the counties within states is developed below in Section II.

To consider the concept of a cost of living index, geographical differences in the cost of living affect the purchasing power of wages and salaries, which are always paid in nominal dollars, at different locations. For salaries to be comparable in real terms they therefore must be deflated (i.e., divided by) a geographical cost of living index such as the one developed here. To avoid questions of interpersonal comparisons of utility, the BLS' concept of a standard budget for a family of four, which we use here, is one that seeks to keep the head of the household on the same indifference curve with respect to commodities purchased irrespective of where he or she locates.

This concept does not include special non-monetary returns (e.g., sunshine or seaside locations) or benefits that can sometimes partly justify the higher costs and that also affect location decisions. It is limited to differences in the monetary costs of living such as differences for comparable housing accommodations in different places, which can be substantial.

The uses that have developed for geographical cost of living indices, as well as an interpretation of its misuses, depend upon this concept. It is useful to employees in making decisions to locate because, to the extent that the cost side is to be considered in making these decisions, it is what the salary will buy in real terms, not in nominal terms, plus their evaluation of the non-monetary returns that basically govern the outcomes. That is, the evidence is strong that employees tend to make a correction for price level and cost of living differences, as well as non-monetary benefits, albeit implicitly, and that there is no substantial money illusion (after allowing for lags in adjustment). Because of this behavior, multiplant firms with plants in different locations, state school systems with urban and rural unit districts, universities competing in inter-state job markets, and other kinds of employers who wish to maintain salaries that are comparable in different locations (plus or minus the non-monetary environmental fringes) must also normally make some adjustment either explicitly or implicitly for the more purely nominal differences.

A geographical cost of living index is not the same as an educational price index, however, since it does not include an index of the

price of all the things with appropriate weights that a school district or university purchases. Nevertheless it is sometimes used as a proxy. The State of Florida for example has used the Florida Price Level Index, which is an index of living costs in Florida counties, as an adjustment factor in its school aid formula. Similarly, analyses of the adequacy of the resources provided for education, including interstate comparisons such as the recent study by A. Hickrod et. al. (1987, p. 9) often seek to remove some of the nominal differences in costs in this way. There are non-monetary differences in benefits that probably justify only part of the cost differences among different localities. The justification for making such an adjustment is that teachers migrate from district to district depending on the real, and not the nominal, salary. This real salary (i.e., after adjustment by a geographical cost of living index) therefore serves as a proxy for the supply price for teachers with a given level of training, ability, and experience, and hence for a given quality of education provided by those teachers, especially since salaries account for about 80 percent of most education budgets. Geographical differences in prices for items in the other 20 percent of the budget reasonably can be expected to be highly correlated with the same geographical differences in the cost of living that affect real salaries (e.g., housing and construction costs), even though the correlation is not perfect.

However the non-monetary attractions or detractions of the job also need to be factored in to get a true real supply price. As pointed out by Barro (1981, p. 7) there are many factors that make a

school district more or less attractive to professional staff other than differences in nominal salary and the local cost of living. These other factors also influence the supply price of staff to the district. For example, a further addition needs to be made to a nominal salary to compensate for the student population in especially unattractive neighborhoods. One of the more complex approaches is to develop separate simultaneous demand and supply equations for determination of teachers' salaries at the district level, and then after controlling for the average level of teachers experience, remove the demand-side influences on salary (such as income, property value, and local "tastes" for education) to isolate the supply-side effects on the supply price. This simultaneous equation approach is used by Brazer and Andersen (1975), Boardman, Darling-Hammond, and Mullin (1979), Wentzler (1979), and Loatman (1980).

Although the main uses of geographical cost of living indices by employers and employees that were mentioned first are more direct, there has been continuing interest in these simple purely supply-side related indices for use in school aid formulas. For this purpose a cost of living index has the disadvantage of not reflecting all of the influences on the supply price of teachers. But it does not have the disadvantage that plagues all of the other cost of education indices that start with data on teachers salaries and use complex methods (or sweeping assumptions in the case of the hedonic price index approach) to remove demand side influences. The cost of living applies to everybody in the locality, not just teachers who are a very small fraction of the total population in the locality, and therefore from

the point of view of the school district is completely supply-side oriented. It also has the merit of simplicity. If taken as a first approximation that omits differences in the nonmonetary advantages or disadvantages of the environment of the school, its use may be better than making no adjustment at all to nominal values.

II. The Theory and The Model

There have been previous attempts to investigate the sources of differences in the cost of living. Sherwood (1975), for example, used the BLS indices and price data to construct standard budgets that isolate the effect of climatic differences on costs. But his indices are limited to this one source of differences and also were constructed for only the 44 cities and regions in this BLS sample. Haworth, Rasmussen, and Mattila (1973) and Alonso and Fajans (1970) explored the extent to which urban population and other variables explain differences in the cost of living within the BLS sample. But they did not undertake predictions for nonsampled areas. Alonso (1970) finds urban population size, when income is included, to be of minor significance. Israeli (1977) found that housing differences were a good predictor of the differential in nominal wages and prices among selected cities. But the only major efforts to extend cost of living indices from sampled to nonsampled areas have been by Simmons (1973, 1988) and by McMahon and Melton (1978). Simmons sampled prices in 12 Florida counties and then used regression equations to extend these prices to all counties in the state. The first result, in the absence of budget studies to obtain the necessary weights, is therefore closer

to a geographic price index than to a cost of living index. Augmented by budget studies, it has been used by the State of Florida since 1978 in the Florida school aid formula. But the expense of collecting the price data, doing the consumer expenditure budget studies, and constructing and updating the index limits the extent to which it can be extended to other states. McMahon and Melton (1978) developed a model that explains cost of living differences within the BLS sample, and then used the regression coefficients, together with measures of the explanatory variables for the non-sampled areas, to predict the cost of living index for all 50 states and for counties within California, Illinois, Pennsylvania, and Texas. But as indicated above, the index was for 1977, the data availability has changed, and there is need to update that index.

Economic theory suggests that changes in the effective demand for goods and for housing, especially when supplies are not perfectly elastic, can play a large part in the determination of geographical differences in living costs. As effective demand rises, the prices of land especially and any other goods for which supplies are not easily transportable and are therefore less than perfectly elastic rise, causing living costs to increase.

The demand function for any given locality shown in Equation (1) below expresses the quantity demanded primarily as a negative function of price ($\alpha_1 < 0$), a positive function of per capita income in the locality ($\alpha_2 > 0$) and a positive function of the stock of consumption habits and/or assets is measured by the price (or value) of housing ($\alpha_3 > 0$):

(1) $$q = \alpha_1 p + \alpha_2 Y + \alpha_3 V + \alpha_4 \Delta P + \mu_1$$

Here p = a price index relevant to goods and services purchased in the area,

q = a market basket of goods and services needed to sustain a family of four at a given level, irrespective of the area,

[c = pq = the cost of living],

Y = per capita income in the locality,

V = value of the house of given size and quality (measured here as the median value of a house available from Census data),

ΔP = percent change in the population in the area, from 1980 to the present, and

μ_1 = disturbances.

The factors shifting the demand function, Y, V, and ΔP, can first be considered briefly. Individual income is a critical element in the demand for virtually all goods and services, raising demand since most goods are normal goods ($\alpha_2 > 0$) when income is higher, and where supply is inelastic (as in the case of land prices), more or less permanently bidding up the price.

Consumer demand is also affected by a stock effect, reflecting assets and/or a stock of past consumption habits, measured here by V, the value of the housing. This stock-habit effect is sometimes measured by using past consumption as a proxy, which is tantamount to permanent income or permanent wealth by means of a Koyck transformation. The Life Cycle Hypothesis of Ando and Modigliani (1963) measures it by using the total stock of assets or net worth. But such

a comprehensive measure of all assets is less relevant for purposes of analysis of geographical price differences than are the assets in the locality in the form of housing. Sherwood (1975, p. 14) found that housing costs vary widely among areas, ranging from an index of 168 in Boston to 68 in Austin, Texas. It is not only that land is immobile resulting in an inelastic supply, so that when demand rises, housing prices are driven up more or less permanently. But it is also that climatic differences have long run effects on differences in housing costs. Additionally, imperfect competition in the construction trades and building materials industry contributes to the inflexibility of prices. Using the value of the median house in a locality as a measure of past asset accumulation (and consumption habits) has the further merit of being a measure that is widely available for localities from the Housing Census, whereas the less relevant more comprehensive asset measures are not.

Population growth can have ambiguous effects on prices, as was stressed earlier by McMahon and Melton (1978, p. 326). Rapid population growth can increase the pressure on some facilities other than housing, and act to raise their prices ($\alpha_4 > 0$). On the other hand, economies of scale in certain services such as schools also can be achieved as pointed out by Alonso (1970, pp. 72-75), ($\alpha_4 < 0$). Furthermore, as population migrates toward lower cost areas as it did in the early 1980s to Texas, Georgia, Kentucky, and Colorado, for example, the correlation between the population increase and the geographical price index would be negative ($\alpha_4 < 0$). The net effect cannot be inferred from economic theory, but because of the large

migration toward the south and the sun belt states that occurred since the 1980 Census, it is postulated that this relationship will be negative ($\alpha_4 < 0$).

The supply equation expresses price as a positive function of the quantity supplied both in the short run and in the long run ($\alpha_5 > 0$), as well as of housing costs ($\alpha_6 > 0$):

$$(2) \qquad p = \alpha_5 q + \alpha_6 V + \mu_2$$

where μ_2 = disturbances, and all other variables have been defined under Equation (1). Assuming linearity, the demand and supply functions may be solved simultaneously eliminating q. The resulting reduced form price equation then can be multiplied throughout by the appropriate quantity weight $\bar{q}$ representing the market basket of commodities in the standard budget for a family of four. Since these quantity weights are designed to maintain the same level of well being in each area, they are treated as constants and as part of the parameters in Equation (3) below. This result contains the key determinants of the cost of living, C, in each locality:

$$(3) \qquad C = p\bar{q} = \frac{\alpha_2\bar{q}}{1/\alpha_5-\alpha_1} Y + \frac{(\alpha_3+\alpha_6/\alpha_5)\bar{q}}{1/\alpha_5-\alpha_1} V + \frac{\alpha_4\bar{q}}{1/\alpha_5-\alpha_1} \Delta P + \mu_3$$

Since $\alpha_1 < 0$, the denominators can be expected to be positive. The first two numerators can be expected to be positive as suggested above, and the sign of the third numerator is indeterminate.

III. Estimation of the Model

The parameters can be simplified as shown in Equation (4), the model to be estimated. Here β_1 and β_2 are expected to be positive, and β_3 is indeterminate, but probably negative:

$$(4) \qquad C = \beta_1 Y + \beta_2 V + \beta_3 \Delta P + \mu$$

The definitions and data sources for the variables are:

C = Cost of Living Index for the 23 SMSA's published by the U.S. Bureau of Labor Statistics (1982.6, p. 45). These are updated to apply to March 1988 by use of the Consumer Price Index from the U.S. BLS (1988.6, p. 97) shown in Appendix A. A weighted average of the urban and rural components of the CPI in each region was used, with weights consisting of the percent of the population that is urban vs. rural in each state from the U.S. Bureau of the Census.

Y = Per Capita Personal Income, in thousands of dollars. For states this is for 1987-IV from U.S. Department of Commerce (1987.4, pp. 72-3), and for counties in Illinois it is for 1986 from (ibid. pp. 56-7) as shown in Appendix B.

V = Value of a Standard House; measured as the median value of a house for 1980, the latest year available, from the Census of Housing, U.S. Department of Commerce (1980, HC80-1-A).

ΔP = Percent Change in Population, from 1980 through 1987, from Current Population Reports, U.S. Department of Commerce (1988, p. 16, Table 1).

The results obtained for the regression which together with the data are shown in more detail in Appendix C is as follows. The t-statistics are shown below in parentheses:

$$(5)\quad C = \underset{}{56.66} + \underset{(4.25)}{3.69Y} + \underset{(4.16)}{.292V} - \underset{(2.71)}{.689\Delta P} \qquad \underset{(-2.75)}{}$$

$R^2 = .709$
$F = 15.43$ Prob. $F = .0001$
$DW = 2.09$

The signs are as expected and the t-statistics indicate that all coefficients reach a high .01 level of significance or above. Multicollinearity among the explanatory variables is sufficiently low (under .47 as shown in Appendix C and the R^2 as shown above is quite good for cross section data. The sample is too small to partition it into four subsets and use seemingly unrelated regressions. But the alternative procedure used of weighting the urban and rural indices by that state's urban vs. rural population distribution is more precise, and therefore is a superior procedure to using seemingly unrelated regression methods or regional dummies. It also relates somewhat more precisely to rural school cost and consolidation issues, such as those considered by Ward (1988, pp. 4-5).

Other regressions were tested, using population <u>levels</u> in place of the change in the popualation over time for example. The Consumer Price Index which is a major component of cost of living differences was also explored as a dependent variable. But it has the disadvantage of being independent of differences in the cost levels in the base year. However none of these steps significantly improved upon the result shown in Equation (5).

Differences in the cost of housing still emerge as by far the most significant source of differences in the cost of living. They account for about 23 percent of a typical household budget. Higher per capita incomes also account for some of the difference, especially in Connecticut and the Northeast. The effect of the growth of population is not a major factor, consistent with Alonso's (1970) earlier results. It is almost swamped, in fact, by the more recent tendencies in the U.S. for some industries and population to gravitate toward the lower cost of living in the new South and the more recently developing areas.

IV. Geographical Differences in the Cost of Living The Results

By States. The differences in the cost of living among the 50 states and the District of Columbia are shown in Table 1. They are obtained using the regression equation (5) together with measures of per capita income (1980), value of a standard house, 1980, and percent change in the population from 1980 through 1987 measured for each state. The cost of living index then was normalized so that 100 represents the national average for all states weighted by their population.

These results indicate that there is a 53 percent variation in the cost of living among states. The higher cost of living states continue to be in the East, Connecticut (123.7), New Jersey (119.1), and the District of Columbia (124.9) in particular plus Hawaii (113.9). In these places higher incomes and higher housing costs are both a factor. The lower living cost states are those in the South,

Table 1

Differences in the Cost of Living Among States, 1988

State	Index 1988	Percentage Change 1977-88		Index 1988	Percentage Change 1977-88
Alabama	86.9	-0.3	Montana	91.6	-5.3
Alaska	101.7	n.a.	Nebraska	100.3	5.2
Arkansas	84.8	-0.9	Nevada	97.1	-9.1
Arizona	88.0	-11.3	New Hampshire	101.9	-4.4
California	110.2	2.2	New Jersey	119.1	2.1
Colorado	101.6	1.0	New Mexico	83.6	-12.1
Connecticut	123.7	2.9	New York	110.7	0.3
Delaware	101.7	-8.5	North Carolina	89.6	1.4
District of Columbia	124.9	19.4	North Dakota	94.6	-2.8
Florida	90.6	-1.8	Ohio	100.7	0.6
Georgia	90.0	-0.5	Oklahoma	87.3	1.7
Hawaii	113.9	n.a.	Oregon	99.5	1.4
Idaho	89.0	-7.7	Pennsylvania	100.3	5.4
Illinois	107.7	4.5	Rhode Island	101.3	-2.2
Indiana	96.6	0.3	South Carolina	84.9	-3.9
Iowa	102.5	7.2	South Dakota	92.9	-1.0
Kansas	98.0	4.5	Tennessee	89.9	2.5
Kentucky	89.2	-5.7	Texas	87.1	-0.4
Louisiana	86.8	-3.7	Utah	84.8	-14.2
Maine	94.0	2.4	Vermont	94.9	-6.2
Maryland	109.4	-3.4	Virginia	101.2	7.9
Massachusetts	114.0	5.8	West Virginia	89.4	4.8
Michigan	102.2	1.5	Washington	101.5	1.8
Minnesota	104.7	3.8	Wisconsin	101.1	1.4
Mississippi	81.6	-4.8	Wyoming	95.8	-2.5
Missouri	96.8	0.3			

e.g., Mississippi (81.6), and South West, e.g., New Mexico (83.6), where warmer weather and less population density reduces housing costs. The Midwestern and North Central states remain in the middle.

With respect to changes over time, the pattern remains much the same as in 1977. Living costs in Massachusetts, Connecticut, District of Columbia, Michigan, Illinois, and Washington State which were relatively high in 1977 now are even higher. And the lower cost of living areas such as Kentucky, Louisiana, New Mexico, and Wyoming now are even lower. Part of this change over time reflects the heavier weight given to rural prices in rural states than in the 1977 study (and vice versa). But part of the change may be related to the change from the earlier oil boom in the southwest to a less vigorous growth in that region as oil prices fell later in the 80's (e.g., Texas -.4, New Mexico -12.1, Arizona -11.3). It is also only more recently with the lower oil prices and industrial recovery from 1985-88 that increases in the cost of living have begun to occur in Massachusetts (+5.8), Virginia (+7.9) and parts of the midwest (Pennsylvania +5.4, Illinois +4.5).

By Counties. Differences in the cost of living among counties in Illinois are shown in Table 2. The regression equation (5) is used to predict these differences based on the per capita income in each county from the 1980 Housing Census, and the change in population from 1980 to 1986 in each county. The index then is normalized with a state-wide population weighted mean of 100. The same method could be used in other states.

Table 2

Cost of Living Differences Among Counties in Illinois, 1988

County	Index 1988	Percent Change 1977-88		Index 1988	Percent Change 1977-88
Adams	81.7	-12.1	Lee	93.9	1.6
Alexander	80.8	-0.5	Livingston	94.2	2.0
Bond	86.1	-2.3	Logan	93.0	1.4
Boone	94.0	-7.3	McDonough	89.6	-3.4
Brown	84.0	-3.7	McHenry	100.6	-1.1
Butrsu	95.3	4.8	McLean	96.3	-0.9
Calhoun	83.1	-4.1	Macon	97.6	5.8
Carroll	91.1	1.2	Macoupin	86.0	-2.3
Cass	90.1	2.5	Madison	101.3	12.9
Champaign	93.9	-4.0	Marion	86.2	-0.7
Christian	90.3	2.2	Marshall	97.2	6.6
Clark	86.9	-1.3	Mason	95.4	5.1
Clay	81.0	-3.8	Massac	84.3	-2.1
Clinton	86.4	-6.1	Menard	94.3	3.3
Coles	80.8	-12.8	Mercer	91.2	1.2
Cook (Chicago)	102.2	3.8	Monroe	94.2	-2.7
Crawford	80.3	-8.3	Montgomery	84.6	-2.4
Cumberland	84.3	-1.8	Morgan	92.8	-0.3
Dekalb	95.3	-4.4	Moultry	90.1	0.0
Dewitt	95.9	6.8	Ogle	96.3	0.4
Douglas	83.4	-8.2	Peoria	101.6	8.8
DuPage	111.9	3.8	Perry	87.5	-1.3
Edgar	88.3	0.1	Piatt	98.0	6.1
Edwards	82.4	-2.3	Pike	84.4	-2.1
Effingham	89.5	-1.7	Pope	77.8	-6.2
Fayette	85.0	-1.5	Pulaski	77.0	-5.2
Ford	92.8	1.2	Putnam	96.7	4.4
Franklin	84.1	-0.6	Randolph	89.9	-0.7
Fulton	92.7	4.4	Richland	88.0	-0.9
Gallatin	82.0	-2.7	Rock Island	97.8	1.5
Greene	84.5	-13.5	St. Clair	109.5	24.7
Grundy	111.0	27.5	Saline	84.2	-1.9
Hamilton	82.7	-0.5	Sangamon	97.6	3.5
Hancock	86.7	-0.4	Schuyler	87.6	-1.1
Hardin	78.4	-4.8	Scott	87.1	-1.3
Herderson	87.2	-2.2	Shelby	87.4	-0.8
Henry	94.8	3.3	Stark	92.4	5.0
Iroquois	90.7	0.2	Stephenson	92.9	-2.0
Jackson	87.0	-7.4	Tazwell	99.0	3.9
Jasper	83.8	-5.2	Union	85.2	-1.3
Jefferson	86.4	-1.2	Vermilion	90.7	2.4
Jersey	88.2	-2.9	Wabash	88.8	3.1
Jo Daviess	90.8	1.2	Warren	91.0	1.0
Johnson	72.1	-18.1	Washington	88.4	-0.5
Kane	98.5	1.1	Wayne	84.7	-1.5
Kankakee	92.8	-0.9	White	87.8	3.3
Kendall	103.5	-3.4	Whiteside	93.6	1.5
Knox	96.4	6.4	Will	96.3	1.2
Lake	111.6	9.4	Williamson	84.4	-4.0
LaSalle	95.7	5.0	Winnebago	96.0	-1.4
Lawrence	89.1	3.2	Woodford	97.4	0.9

These results show a 45 percent variation among counties, from a high of 111.9 in DuPage in the Chicago suburbs and 102.2 in Chicago itself (Cook) to lows of 72.1 in Johnson and 77 in Pulaski and Pope counties. This reflects large urban-rural differences resulting primarily from differences in the cost of housing. They are quite comparable to the 50 percent or so differences in the cost of living among the state averages.

Over time, the cost of living relative to the state wide average has risen in Chicago (Cook) (+3.8%), Chicago Suburbs (e.g., DuPage +3.8% and Lake +9.4%), and in Peoria (+8.8%). But it has fallen to still lower levels in Johnson (-18.1%), Adams (-12.1%), Coles (-12.8%), and other rural counties adversely affected by the farm recession. The effects from the economic recovery since 1985 and the lower price of the dollar have been felt much more slowly in the farm economy.

V. Conclusions

There are large differences of 53 percent in the cost of living among states and of about 45 percent within states. The basic pattern of differences between higher costs in Eastern Seaboard urban and industrial areas and lower costs in Southern and rural areas does tend to persist over time. This is largely because the larger urban areas and bedroom suburbs are typified by higher residential land costs, and higher fuel and other housing costs, and also by higher incomes, a basic pattern that has not changed drastically. There may also be some nonmonetary benefits of living in these areas that at least

partially justify some of the cost differences. But over time recent changes in the geographical patterns appear to be related to the 1985-88 industrial recovery affecting the northeast, lower oil prices affecting the south in a different way, and the continuing farm recession. In 1980-85 the industrial states were hurt more severely than the oil producing and western states. But prices appear to have been somewhat inflexible downward there, and these areas also recovered more quickly than the agricultural states and rural areas, where land and housing prices remain somewhat lower.

Part of the income differences among areas--roughly a third--are purely nominal differences in monetary salaries, given that there are differences in the cost of living. In the absence of a money illusion, employers as well as employees interested in maintaining a parity between services that are purchased or provided in different areas within states or between states must make some kind of adjustment implicitly for differences in the cost of living as well as in nonmonetary amenities. A geographical cost of living index is one step toward making such adjustments somewhat more explicit.

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